

— Kombucha — The Miracle 'Fungus'

*Praised in Asia
for millennia
for its health-
promoting
properties, the
Kombucha
brew's growing
popularity
worldwide is no
mere storm in a
teacup!*

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ORIGIN OF THE KOMBUCHA 'FUNGUS'

No one can say, for sure, how and where the Kombucha fungus originated, but we do know that it has been used for at least two thousand years. It does not really matter whether the Chinese, Koreans, Japanese or Russians were the first to ferment the fungus. To be exact, it isn't really a fungus as such, but rather a community of yeast and bacteria. One authority describes it as a lichen. The origin of the name could be Japanese, with *kombu* standing for the brown tea algae and *cha* for tea. The best description, in my opinion, is that of the herbalist, Pastor Weidinger, whom I have used as a source throughout this book. He says:

"Kombucha tea is an ancient East Asiatic beverage which came out of the ocean... For three years I was a missionary on the island of Taiwan... This south-eastern coastal region with its subtropical climate and extended growing period made ideal conditions for growing the tea, which was farmed in large areas. This province is regarded as the origin for "tea", i.e., in Latin, *Thea*. The original name given by the Chinese writer Kuo-Po to the beverage extracted from these leaves was *Tu* or *Tschuan*. Today it is called *Ch'a*. In the province of Fukien, however, it is still called *T'e*. This has given me a closer understanding of the word tea. *K'un-Pu-ch'a*, a tea-like wine..."

"My missionary activities also required my travels to the islands of Quemoi and Matsu which are situated close to the mainland near the Province of Fukien. I was very impressed by a beverage which was served to me by the local people which had a sweet-sour taste and was very refreshing in the hot climate of the area. Was it wine which tasted like a delicious tea or an unusual tea that tasted like a rare wine? Notably, after drinking this beverage, I not only felt stronger after the long and tiresome walk but, strangely enough, felt healthier. In particular it helped my metabolism a great deal in this climate and made me feel very relaxed. When I asked what it was, *K'un-Pu-ch'a* came the reply. I was startled. "Tea which came from life in the ocean"?

"Already in the Tsin-Dynasty, about 221 BC, it was known and honoured as a beverage with magical powers enabling people to live forever. The tea was given different names. One of the most famous was the "Godly *Tsche*". This particular tea was used as a remedy for chronic gastritis. People also tell of the Korean medicine man named Kom-bu who, in the year 414, prescribed the tea to heal the Japanese Emperor's disorders. The "Godly *Tsche*" came from China, via Korea to Japan where it was given the name "*Tsche* of *Kombu*"."

KOMBUCHA RESEARCH IN THE WESTERN WORLD

The most famous research results come from the University of Omsk in Russia and, in the West, from the research of Dr Rudolf Sklenar. Dr Sklenar's research is often mentioned in the German press. He came from Eastern Germany where Kombucha has been used since the turn of the century among ordinary people. He studied medicine in Prague and had his first contact with the Kombucha fungus in a monastery. He worked with the culture during the Second World War and based his scientific work upon Kombucha. In the 1960s he published his research in the scientific and general press, which resulted in increased awareness of Kombucha's healing and strengthening properties. Dr Sklenar used Kombucha successfully for diabetes, high blood pressure, all types of digestive problems, stomach and bowel illnesses, rheumatism and gout.

Dr Sklenar's main area of work became the biological treatment of cancer, and he integrated Kombucha with this programme. His healing methods were so successful that they were adopted by many doctors. A company which carries his name today manufactures the Kombucha beverage and Kombucha drops. When it was reported that Dr Veronika Carstens (wife of a former German President) was using Kombucha with all her cancer patients, the fungus beverage became a popular healing remedy. Dr Sklenar and Dr Carstens recommended the use of Kombucha to their cancer patients as a complement to other therapies.

KOMBUCHA—FACT OR FICTION?

Reports dealing with healing successes are often generalised and passed on without the desired research. With medicinal herbs, for instance, the general perception is that they can only heal and do not have any negative side-effects. In fact, what is a health remedy for some may prove to be quite the opposite for others. When I first received the Kombucha fungus from a friend, I was given an information leaflet about Kargasok tea.

"Kargasok Tea:

Approximately 60 years ago, a Japanese woman visited the region of Kargasok (in Russia) and was stunned to find so many healthy people who were over the age of 100. She actually met a man at the age of 130 who had married an old woman of over eighty who was still able to conceive children. The Japanese woman was fascinated by this and attempted to obtain the secret of the eighty-year-old woman who hardly had a wrinkle. She discovered that in every household, young and old alike consumed approximately 1/2 pint (US) or one-third litre of

Kombucha tea each day. To make this tea, the Japanese woman received a special yeast fungus and instructions on how to use the fungus. She took the fungus with her to Japan where she started to duplicate it. Her friends were invited to drink the tea as well and she also passed the fungus on to them with instructions on its use. They passed it on to their friends. After having consumed the tea for a period of time, the people began reporting successful effects:

- A man with a blood pressure of 210/120 was able to reduce it to 140/80.
- A young girl diagnosed with shingles was cured.

"In Kargasok, cancer and high blood pressure are unknown. In Japan, soon after this tea became the subject of TV and radio programmes, well over one million Japanese were consuming the tea. Eventually the tea found its way to Taiwan, then to Hong Kong and now travels around the world where it is passed on from one friend to another as a token of appreciation and love. This tea appears to be a miraculous remedy for many types of suffering. Researchers have discovered that the fungus has three basic elements, without which the body cannot function. Encouragingly, Dr Pan Pen from Japan reported as follows on the effects of the culture:

"This tea:

- clearly lengthens the lifespan
- is a health remedy against chicken pox and shingles
- reduces the formation of wrinkles

- discourages the formation of cancer
- prevents adverse menopausal symptoms
- restores visual acuity
- strengthens leg muscles
- heals arthritis
- enhances sexual drive
- heals sweaty feet, constipation, joint and back pains
- heals abscesses
- heals blocked arteries and diabetes
- strengthens kidneys
- heals cataracts and heart disease
- restores the appetite and heals sleeping disorders
- reduces the chance of gallstones and liver problems
- reduces obesity and stops diarrhoea
- heals haemorrhoids
- helps restore colour to grey hair; helps baldness conditions."

This list may appear naive, and there is no record of the type of teas that were used, nor whether the tea brew or the fungus itself was being used. One cannot generalise about these conditions: one individual may be helped, another not. Wrinkles, for example, may be helped more by rubbing pulp on the face. There is evidence that Kombucha helps restore hair. As for preventing hair greying, it has not worked for me but perhaps may work for others.

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WHAT IS KOMBUCHA?

Kombucha is composed of a number of bacteria and special yeast cultures in a symbiotic relationship. This living organism ferments sweetened tea to become the Kombucha beverage. The refreshing taste gives one a

feeling of well-being. The amount of living yeast it contains gives the Kombucha beverage an active life which continues after decanting it into bottles. Kombucha has become increasingly highly regarded as an aid to preventing many illnesses.

HOW TO MAKE YOUR OWN KOMBUCHA

Ingredients (Metric/Imperial measurements):

- 2 litres (3-1/2 to 4 pints) boiling water
- 160 grams (5-1/2 ounces) of white granulated sugar
- 2 to 4 teaspoons (or tea bags) tea—black, green, or a mixture
- 1 healthy Kombucha culture
- 2 tablespoons vinegar (This is used only with the first brew, if no starter Kombucha tea is available. In subsequent brews, use 200 ml (1/3 pint) of the brew as a starter and omit vinegar).

Alternatively, a herbal tea—though not one that contains oil—may be used. (You need to be sure that the herbs have been properly dried and stored without risk of spore or fungal contamination. Those containing appreciable amounts of oil are: angelica, bergamot, camomile, caraway, curcumin, dill, fennel seed, lavender, lovage, marjoram, mint, peppermint, rosemary, tarragon, thyme, wormwood.) We recommend you start brewing with black and/or green tea. When you are more confident you can experiment with herbs.

In this case, use 2 to 3 teaspoons of herbal tea, pour on boiling water, leave for 5 minutes, strain off tea leaves (or remove tea bags) and proceed with recipe below.

Ingredients (USA measurements):

- 10 cups (4 to 5 US pints) boiling water
- 3/4 cup white granulated sugar
- 2-4 teaspoons (or tea bags) tea—black, green, or a mixture
- 1 healthy Kombucha culture
- 2 tablespoons vinegar (This is used only with the first brew, if no starter Kombucha tea is available. In subsequent brews, use 1 cup (1/2 pint approx.) of the brew as a starter and omit vinegar).

Method:

To make a batch of Kombucha, you will need a bowl made of china, porcelain, glass or ceramic that will hold about two and a half litres or six pints.

Place the tea in a large pot, pour on boiling water, add sugar and stir until dissolved, then leave to brew for 10 to 15 minutes. Strain brewed tea into the bowl. Add the remainder of the water and the vinegar (or 'starter' brew) and allow to cool, if necessary, to room temperature.

Wash the Kombucha fungus and place on top of the water. The mushroom has a smooth side (possibly lighter in colour) and a rougher side. It should be allowed to float smooth side upwards. A gap of at least one-and-a-half inches should be left between the fungus and the top of the bowl.

Cover with muslin (or some other suitable cloth which will allow air through) and anchor this below the lip of the bowl with elastic.

The container should then be stood in a warm place (ideal fermentation temperature is between 70° and 84°F (23° and 28°C), depending on the season). The fungus does not require any light but needs warmth and air. Smoke is harmful.

After six to nine days of fermentation (it is faster in summer or in higher temperatures), remove the fungus with clean hands, strain the beverage and pour into bottles (Alternatively, if preferred, pour the beverage into one or more lidded jugs). After some experience you will decide the best fermentation time for *your* conditions. The drink should have a zingy and slightly sweet taste, not too acid.

The bottles should be placed in the fridge, otherwise the fermentation process will continue and the beverage will obtain a sour taste. Once the fungus has been removed from the tea brew, it can immediately be used to start a new batch.

The most suitable containers for brewing are bowls made of glass, porcelain or glazed pottery. Metal containers—including stainless steel—are not used because acids in the brew react with the metal. A comparison can be made with whisky or wine which taste different when fermented in wood. Plastic containers are more and more commonly used, in which case they should be high quality food-grade and acid-resistant. Polyvinyls, polypropylenes and cheap plastics can cause chemical reactions in the brew. Beer-brewing containers used for home brewing can be used. The containers should have a wide opening and be not too tall nor filled up to the top. A wider, more shallow pot enables the Kombucha to ferment quicker and better.

THE 'FUNGUS' REPRODUCES ITSELF

With each brew, a new fungus will have grown (by binary fission) on top of the original 'pancake' floating on top of the liquid. The pancakes can be parted easily (if in difficulty, use a clean pair of scissors to gently ease away). This can then be used to start another batch or to pass on to a friend.

If no batches are started on the same day, the fungus can be preserved by placing it into an airtight container with some Kombucha beverage and keeping it in the fridge until required.

The recommended amount to drink daily is three average-sized wine glasses, one before breakfast and one 20 to 30 minutes after lunch and your evening meal. Larger amounts can be consumed quite safely. There are no limitations to the ways in which a Kombucha brewer can experiment with this beverage.

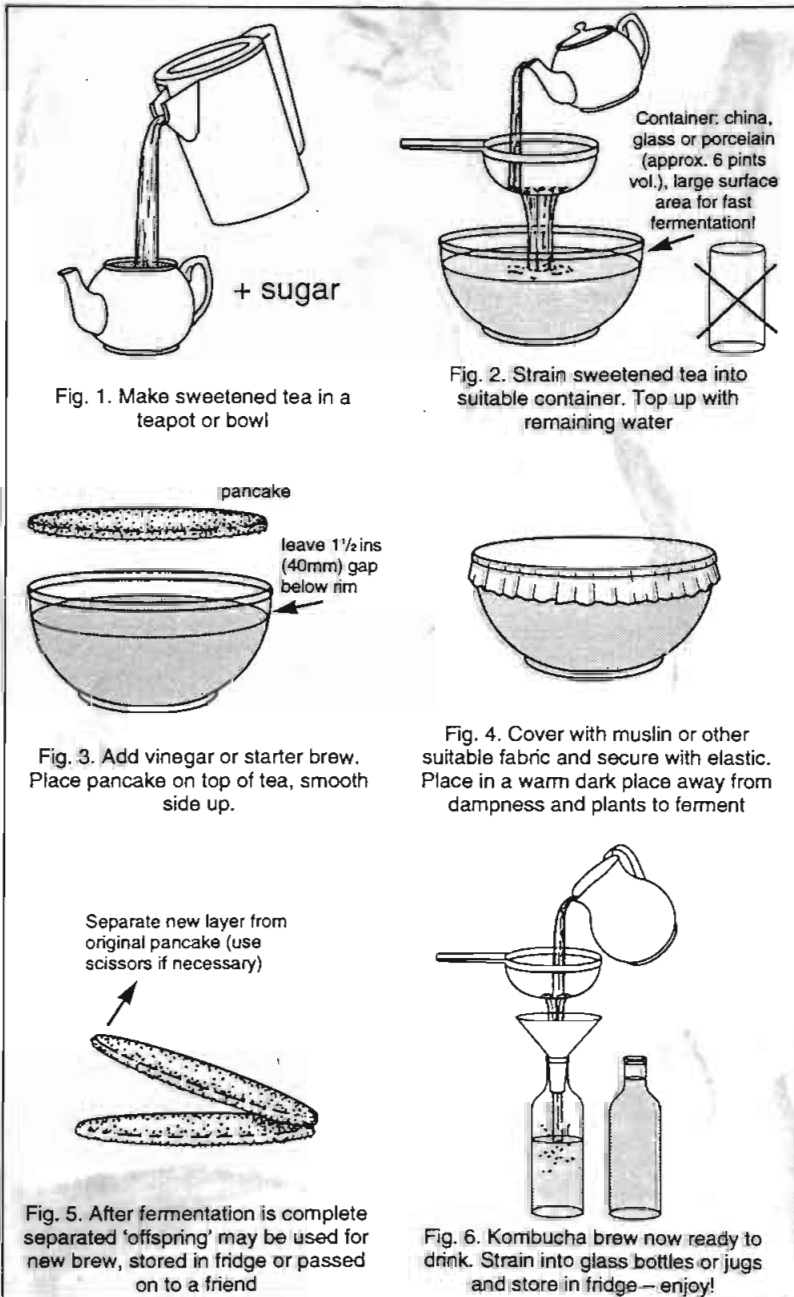


Fig. 1. Make sweetened tea in a teapot or bowl

Fig. 2. Strain sweetened tea into suitable container. Top up with remaining water

Fig. 3. Add vinegar or starter brew. Place pancake on top of tea, smooth side up.

Fig. 4. Cover with muslin or other suitable fabric and secure with elastic. Place in a warm dark place away from dampness and plants to ferment

Fig. 5. After fermentation is complete separated 'offspring' may be used for new brew, stored in fridge or passed on to a friend

Fig. 6. Kombucha brew now ready to drink. Strain into glass bottles or jugs and store in fridge—enjoy!

CONTINUOUS FERMENTATION PROCESS

After I first wrote about Kombucha, I received a mass of comments and enquiries from people in Eastern and Middle Europe. These people recalled their mothers or grandmothers having a large container of between 10 to 20 litres (3 to 4 US gallons) stored in a warm place.

People drank the brewed beverage when required, and every now and again the container was refilled with 4 to 5 litres (10 to 12 US pints) of sweetened tea. This was one form of continuous fermentation. Different top-ups can be made with different teas. Children, for instance, often love a mix made with wild blackcurrant herbal tea. I have never heard of any problems with this type of fermentation.

On reading about this, I immediately purchased a large container with a tap located several centimetres above the base so that it would not discharge the yeast sediment from the bottom. I discovered that Russian and Polish workers had brought this process with them into the Eastern regions of Germany. Some war refugees also brought this process with them to the West.

Continuous fermentation, besides being easier, also has the advantage that a larger amount of fluid does not react as quickly to temperature variations.

A large container can also be equipped with heating plates as used with the fermentation of beer. In my experience, I must say that the continuous fermentation process is the ideal way to brew Kombucha for personal use.

SOME FREQUENTLY-ASKED QUESTIONS ABOUT BREWING KOMBUCHA

Q: How long should I have to wait to drink my Kombucha?

A: A week from brewing is an average time. Six to eight days after storing your covered bowl of Kombucha, taste the tea. It should be neither too sweet nor too sour. If it is too sweet, allow the mushroom to ferment for another day or so. If the taste is rather sour, then leave the next brew for one day less. You may still drink the tea—it will be very good for you, though you may like to add some spring water or fruit juice!

Q: What is the correct temperature for the mushroom?

A: The Kombucha mushroom likes the sort of temperature used in wine or brew fermentation. For that reason, if your room is cold (in winter, for example), it might be useful to use a heated brewing mat or thermal collar. These can be purchased from most brewing shops. In summer, average daily room temperatures will be fine.

An airing cupboard is a popular place in which to place the brew. However, if the hot water tank is not well-insulated, the temperature will be a little high.

Q: How do I know if it is working?

A: Firstly, don't be surprised if the mushroom sinks to the bottom. It generates carbon dioxide under its surface as it transforms the tea and may need a while to build up sufficient gas and buoyancy to float back to the surface. After a few days, you should notice a smell of vinegar and the formation of a transparent membrane on top of the tea surface. If this occurs, all is well.

Q: What happens if I damage the mushroom?

A: The mushroom is very hardy and will still produce a well-formed offspring, even if torn or partly-formed. The offspring

may be thinner over the damaged area, but the thinner area will get thicker with successive generations. If the accumulated gas under the mushroom pushes the thin part of the mushroom membrane away from the tea surface, you may lift the mushroom to allow the gas to escape. This will bring the thinner membrane back into contact with the liquid surface and will encourage a more uniform growth.

Q: What happens if I go on holiday for a while?

A: The Kombucha mushroom is a hardy beast and will sleep quite happily in a little of its tea fluid for three to six months when left in the refrigerator. It's best to lay it out flat and make sure that it has a little air in the container so that it can breathe.

Q: How do I produce more mushrooms for my friends?

A: A Kombucha will happily produce offspring in just a small (half an inch or so) amount of tea. So, in this way, you can produce more offspring without using lots of sugar and tea and without having to generate large amounts of Kombucha tea. The resulting Kombucha tea may be a little too sour to drink, however, so prepare at least one batch with the usual amount of liquid.

Once you have a number of mushrooms, it is possible to refrigerate them successfully, stacked in a container with a little fluid in the bottom. Kombucha offspring do not fight—they live very happily together! All the mushrooms may be kept active by brewing from them in rotation. In this manner, you will always have a number of healthy, active mushrooms to give away on request.

Q: What effect will drinking the tea have on my health?

A: The effects of drinking the tea vary from person to person. In general, however, the tea acts in a gentle,

balancing manner and helps the body heal itself in whatever way is necessary.

As a general rule, the more in touch you are with your body, the greater the effect you will notice. You may feel warmth, notice an increased brightness of vision, a general relaxing, an opening of your energy. A general feeling of well-being is often reported. The number of colds you get may well be reduced. Older people frequently report an increase in mobility and a decrease in niggling joint pains.

If your body is already very open and relaxed and your energy strong, you may not notice these effects. You may simply register Kombucha as the tasty, refreshing, slightly fizzy, benign drink it is, which helps you to stay well!

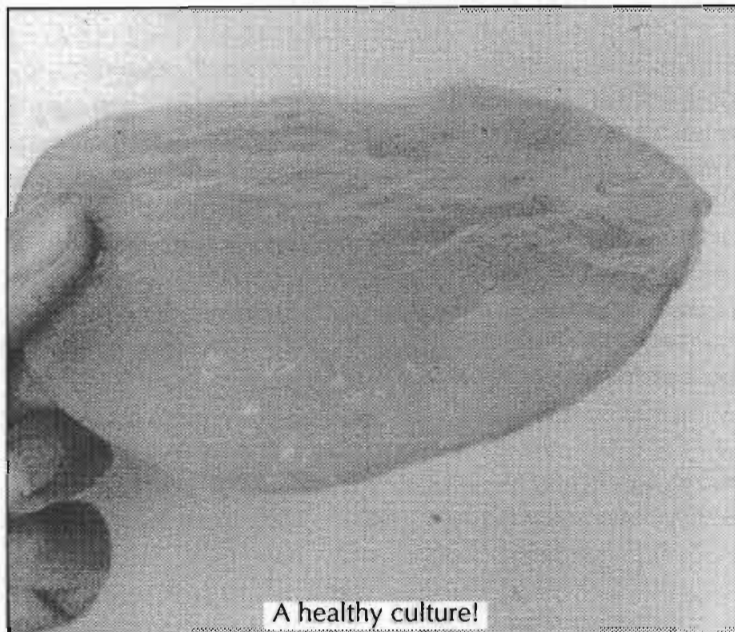
PROBLEMS ASSOCIATED WITH KOMBUCHA FERMENTATION

With any living fungus, accidents can occur which may prove harmful or even lethal to the organism. If the temperatures are not regulated or if the fungus has been stored for a long period of time, it can acquire a glutinous coat. If this happens, it should be cleaned, using lemon juice or wine vinegar. It can then be used again. It is a little harder if the fungus has started to grow mouldy. Too low temperatures or an unclean environment can be the cause of this. In this case, dispose of the beverage and wash the fungus as described above. The usual 10% should be taken from another brew to start a new batch. If there are no other batches, put the fungus into the prepared tea with the required sugar content and add two tablespoons of vinegar (better still, Kombucha vinegar if

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available). The beverage should have a sour smell to it after a few days. This is an indication that the fungus is working. It shouldn't have a mouldy smell. In areas where the vinegar fly (*Drosophila fenestarium*) is active, it is very important to cover the beverage with a muslin cloth fastened by a rubber band to prevent the fly entering the container and laying eggs. (Meixner).

Don't wash the fungus if there is no obvious reason to do so, unless long storage or mould indicates it to be necessary. The fungus is always slimy! In one case I came across a fungus which did not work correctly. The person who owned it had apparently done everything right. I went to the supplier in the next town and found that the liquid used had been stored in a 30 gallon (US) or 25 litre container with a narrow neck. It had been filled right to the top with the fabric cover touching the fungus. The fungus simply did not have enough air to work properly. Even by doubling the fermentation time, the brew was still too sweet and the drink not healthy. I traced the culture further back to the previous supplier where it was not doing well either. Brewing had been done here for the previous five months with only 20 grams of sugar (less than an ounce) being used per litre (1 3/4 pints). All these cultures were brought back to normal performance. With two of them, I added commercial beverage and with another I used a double-strength black tea with double sugar and allowed it to ferment until very sour. With this brew, normal fermentation with good results continued. See also chapter on drying the Kombucha fungus. NB: A dead or ailing culture cannot perform properly and will not produce a healthy drink.



NICOTINE: A DEADLY POISON FOR THE FUNGUS

Tobacco smoke will kill the fungus. People have often rung me and told me that their fungus was not working any more. In 50% of these cases I found that someone was smoking in the room where the fungus was fermenting. The fungus cannot tolerate tobacco smoke. With occasional chimney smoke the fungus may survive. The beverage will, however, adopt a smoky taste which will still be noticeable in future batches.

STORING KOMBUCHA AFTER FERMENTATION

The Kombucha beverage is a living thing, hence its healthy and energising effect. The main problem with our diet today lies in the many preservatives and chemicals it contains. Kombucha fermentation occurs more quickly at room temperature and slows down considerably in the refrigerator. If left to ferment too long, the end result is a sour beverage that is still healthy but not to everyone's taste. During slimming diets, this sour beverage is used frequently. Caution should be taken with bottles stored for a long period, however, as they may explode due to gas build-up.

Commercial Kombucha beverage, available in some health shops, may have a very sour taste, which would be a good indication that it had not been preserved or tampered with. The nutritious effect of this beverage is just as good as 'home brew'. It is

possible that, when first tasting Kombucha, it may be unappealing and sour to some palates. Kombucha should taste pleasant (apart from some herbal tea combinations) and one should not forget that unlimited different flavours can be achieved by experimenting. Depending upon the length of the fermentation, the liquid will be either clear or misty. After a short period of time, the yeast will settle on the bottom. This yeast sediment can either be consumed, as with 'wheat beers', or filtered off with a cloth. Ten per cent of the liquid should be used to start the next batch. The rest may be filled into bottles and sealed with corks—taking care to leave a little gap at the top to prevent the bottles from exploding.

HOW MUCH CAN ONE DRINK?

One circular letter I found being distributed with Kombucha mentioned some possible negative side-effects:

"Rapid detoxification can cause discomfort in some people if too much tea is drunk when beginning treatment. Work slowly up

week by week from six tablespoons daily in divided doses. At two tablespoons, taken three times daily, discomfort can usually be avoided. Some possible side-effects can include headaches, stomach aches, nausea, fatigue, dizziness, mild diarrhoea, constipation, pimples, rashes and wind. However, these are temporary effects lasting from a day to a week or so in basically healthy people. Drink extra water to counter them. People with a disease condition may experience a healing crisis if they drink too much too soon. Kombucha effects appear to begin in the weakest part of the body, then the second weakest and so on."

Since there are thousands of ways to brew Kombucha, there is no definite way to find out which part of the brew might have caused the negative side-effects mentioned in the circular.

MIXING TEAS

The most popular Kombucha drinks are the ones in which different tea mixtures are used, according to taste, in the brewing during fermentation (see "Herbal tea refinement through Kombucha"). Some people add fruits to the brew two days before the end of fermentation. This not only improves the flavour, it also adds vitamins and all the other benefits of the particular fruit or vegetable in the drink. When a seasonal fruit is used, it should be thoroughly cleaned and blended in the kitchen mixer. A strong fermentation is triggered shortly after the fruits have been added. The result is delicious.

Copies of Harald Tietze's book, *Kombucha—The Miracle Fungus*, are available to NEXUS readers in Australia at AUD\$12.00 each (inc. p&h), and in New Zealand at AUD\$13.00 (airmail).